



Huawei ICT Competition 2024-2025 Exam Outline

Practice Competition - Network Track

1. Overview

Competition Stage	Exam Type	Duration	Number of Questions	Question Type	Total Score	Number of Contestants	Note
Preliminary Stage (Mandatory)	Written	90 minutes	60	True or false questions, single-answer questions, and multiple-answer questions	1000	Individual	From January 1, 2024 to the end date of the Preliminary Stage, 50 bonus points will be acquired for passing any of HCIA-Datacom/Security/WLAN certifications, 100 bonus points for any of HCIP-Datacom/Security/WLAN certifications, and 200 bonus points for any of HCIE-Datacom/Security/WLAN certifications. These bonus points can be combined up to a maximum of 200 points. Important: The Uniportal account used for the competition registration must be the same as that of the certification. Otherwise, no bonus point can be given.
National Stage	Written	90 minutes	90	True or false questions, single-answer questions, and multiple-answer questions	1000	Individual	/
Regional Stage	Written	60 minutes	60	True or false questions, single-answer questions, and multiple-answer questions	1000	3 (as a team)	In Regional Stage, each of the three contestants in a team needs to complete the test questions for the written exam, and they will together complete the tasks for the lab exam. One team can submit only one set of answers for each of their written and lab exams. Total score = 30% x Average written exam score of the team + 70% x Comprehensive lab exam score
	Lab	4 hours	/	Comprehensive lab	1000		
Global Stage	Lab	8 hours	/	Comprehensive lab	1000		/

2. Weighting

Technical Direction	Competition Stage	Preliminary Stage		National Stage	Regional Stage		Global Stage
					Written	Lab	
Datacom			40%	40%	40%	50%	50%
DCN			20%	20%	20%	0%	0%
Security			20%	20%	20%	25%	20%
WLAN			20%	20%	20%	25%	30%

3. Scope

3.1. Overview of Exam Contents

The Network Track exam covers knowledge about datacom, DCN, security, and WLAN technologies, including but not limited to routing protocols, Layer 2 switching technologies, IPv6 technologies, data center networks, Huawei firewall features, network security, VPN technologies, and WLAN networking and configuration.

3.2. Knowledge to Be Tested

Direction	Category	Key Items	Description	Preliminary Stage	National Stage	Regional Stage	Global Stage
				HCIA	HCIP	HCIE	HCIE or Above
Datacom	Datacom basics	Datacom basics	Understand the VRP system and basic network knowledge.	✓	✓	✓	✓
		TCP/IP protocol basics	Have general knowledge of the TCP/IP protocol architecture; have a good command of basic protocol technologies, including technical principles and configurations of TCP, UDP, ARP, IP, NAT, Telnet, FTP, and DHCP.	✓	✓	✓	✓
	Switching technologies	Ethernet switching basics	Have general knowledge of the basic Ethernet switching process and MAC address learning process.	✓	✓	✓	✓
		VLAN	Master the principles and configurations of VLAN, VLANIF, MUX VLAN, and VLAN aggregation.	✓	✓	✓	✓
		Link aggregation	Master the principles and configurations of Eth-Trunk.	✓	✓	✓	✓
		Stack and CSS	Master the principles and configurations of technologies such as iStack and CSS.	✓	✓	✓	✓
		STP	Master the loop protection principles and configurations of the spanning tree.	✓	✓	✓	✓
		RSTP and MSTP	Master the principles and configurations of RSTP and MSTP.	✓	✓	✓	✓
	Routing technologies	Static routing	Have a good command of basic IP routing knowledge as well as IPv4 and IPv6 static route configuration modes.	✓	✓	✓	✓
		OSPF	Have a good command of the basic principles and configurations of OSPF.	✓	✓	✓	✓
		OSPFv3	Have a good command of the basic principles and configurations of OSPFv3.	✓	✓	✓	✓
		IS-IS (IPv4 and IPv6)	Master the basic principles and configurations of IS-IS in IPv4 and IPv6 scenarios.	✓	✓	✓	✓
		BGP and BGP4+	Master the basic principles and configurations of BGP in IPv4, IPv6, and VPN scenarios.	✓	✓	✓	✓
		ACL	Master the ACL principles and configurations.	✓	✓	✓	✓
		IP prefix list	Master the principles and configurations of the IP prefix list.	✓	✓	✓	✓
		Routing policies and policy-based routing	Master the principles and configurations of routing control technologies such as routing policies and policy-based routing.	✓	✓	✓	✓
	IPv6 technologies	IPv6 basics	Understand the IPv6 protocol and address-related concepts.	✓	✓	✓	✓
		IPv6 address configuration	Understand ICMPv6 and IPv6 stateless autoconfiguration as well as DHCPv6.	✓	✓	✓	✓
		IPv6 transition technologies	Master the principles and configurations of transition technologies such as dual stack, 6PE, 6VPE, and NAT64.	✓	✓	✓	✓
	IPv6 Enhanced technologies	IPv6 Enhanced	Understand the concept and significance of IPv6 Enhanced.	✓	✓	✓	✓
		SRv6	Understand the basic concepts of SRv6, SRH packet format, and working principles and configurations of SRv6 BE and SRv6 TE Policy.	✓	✓	✓	✓
		FlexE-based network slicing	Understand the application scenarios of network slicing and basic concepts of FlexE.	✓	✓	✓	✓
		IFIT	Master the IFIT measurement model, IFIT packet loss measurement mechanism, and IFIT delay measurement mechanism.	✓	✓	✓	✓
	WAN technologies	WAN basics and technologies	Understand the basic concepts of WAN as well as the principles and configurations of PPP and PPPoE.	✓	✓	✓	✓
		Segment Routing technologies	Understand the principles and configurations of SR-MPLS.	✓	✓	✓	✓
	MPLS technologies	MPLS technologies	Have a good command of the basic principles and configurations of MPLS, MPLS LDP, and MPLS TE.	✓	✓	✓	✓
	VPN technologies	VPN basics	Understand the basic principles and configurations of VPN and VRF.	✓	✓	✓	✓
		Basic VPN technologies	Have a good command of the basic principles and configurations of VPN technologies, such as GRE, L2TP, and IPsec.	✓	✓	✓	✓
		BGP/MPLS IP VPN	Master the basic principles and configurations of BGP/MPLS IP VPN.	✓	✓	✓	✓
		VXLAN	Master the basic principles and configurations of VXLAN (VXLAN-based virtual network).	✓	✓	✓	✓
	Multicast technologies	EVPN	Have a good command of EVPN basic principles and configurations (application of EVPN in campus and SD-WAN scenarios).	✓	✓	✓	✓
		Multicast basics	Master the basic multicast concepts, IGMP principles, and IGMP configurations.	✓	✓	✓	✓
	Network security technologies	PIM	Understand the principles and configurations of PIM.	✓	✓	✓	✓
		AAA	Understand AAA principles and configurations.	✓	✓	✓	✓
	Network reliability and network optimization technologies	Ethernet switching security	Have a good command of port isolation, MAC address table security, port security, MAC address flapping prevention and detection, MACsec, switch traffic control, DHCP snooping, and IP source guard.	✓	✓	✓	✓
		Network access control	Master the principles and configurations of 802.1X authentication, MAC address authentication, Portal authentication, and policy association.	✓	✓	✓	✓
		Network reliability technologies	Master the basic principles and configurations of reliability technologies, such as VRRP and BFD.	✓	✓	✓	✓
	Network management and network programming automation technologies	Network optimization technologies	Master the basic principles and configurations of QoS.	✓	✓	✓	✓
		Network management and monitoring technologies	Have a good command of the basic principles and configurations of SNMP, LLDP, and NQA.	✓	✓	✓	✓
		Basics of network programming automation	Have a good command of basic knowledge as well as the principles and practices of NETCONF and Python.	✓	✓	✓	✓
	SDN technologies	Advanced technologies of network programming automation	Master the basic principles and practices of SSH, YANG, Telemetry, and RESTful.	✓	✓	✓	✓
		Application of iMaster NCE	Have general knowledge of controllers in different scenarios and their usage modes, including iMaster NCE-Campus, iMaster NCE-IP, and iMaster NCE-Fabric.	✓	✓	✓	✓
	Huawei scenario-specific solutions	CloudCampus solution for campus networks	Master the Huawei CloudCampus solution, including the development and challenges of small- and medium-sized campus networks (public cloud/MSP-owned cloud management) and large- and medium-sized campus networks (VXLAN-based virtualized campus network), as well as the technical principles, planning, design, and deployment of the solution.	✓	✓	✓	✓
		SD-WAN solution for branch interconnection	Have a good command of the Huawei SD-WAN solution, including WAN development and challenges, and the solution technical principles, planning, design, and deployment.	✓	✓	✓	✓
		CloudWAN solution for WANs	Master the Huawei CloudWAN solution, including WAN development and challenges, and solution technologies, planning, design, and deployment.	✓	✓	✓	✓
DCN	DCN basics	M-LAG, VXLAN, EVPN, microsegmentation, and SFC	Master the technical principles and configuration of M-LAG, centralized and distributed VXLAN, inter-AS VXLAN, microsegmentation, and SFC, as well as the technical principles of EVPN.	✓	✓	✓	✓
		Virtualization and storage technologies	Have a good command of server virtualization and network virtualization technologies, storage technology principles, and application of these technologies in data centers.	✓	✓	✓	✓
	Advanced DCN technologies and applications	OpenStack cloud platform and container technologies	Have a good command of key OpenStack components and applications, basic container technologies, and container management platform.	✓	✓	✓	✓
		Intelligent lossless, high performance and intelligent computing technologies	Have a good command of the principles and typical application scenarios of key intelligent lossless technologies; have general knowledge of the definitions of high-performance computing, artificial intelligence, and deep learning.	✓	✓	✓	✓
		Hosting and computing	Have a good command of the service deployment process in basic scenarios of the data center network solution, and service orchestration principles and traffic models in each basic scenario.	✓	✓	✓	✓
	Huawei CloudFabric solution	Cloud-network integration and container network	Have a good command of the service deployment process, service orchestration principles, and traffic model in the cloud-network integration scenario; have general knowledge of the basic contents of the container network scenario.	✓	✓	✓	✓
		Multi-cloud and multi-DC solution	Have general knowledge of the basic contents of the multi-cloud and multi-DC solution; learn how to use the MDC to deploy network services in multi-cloud and multi-DC scenarios.	✓	✓	✓	✓
Supercomputing network solution and storage network solution		Understand the contents of supercomputing network and storage network solutions.	✓	✓	✓	✓	
DCN security solution		Learn the contents of the DCN security solution, and have a good command of DCN security design and security service orchestration.	✓	✓	✓	✓	
DCN planning and design	DCN planning and design	Have general knowledge of data center network solutions and data center network planning and design, including network architecture design, data planning, underlay network design, overlay network design, multi-cloud and multi-DC network design, network security design, and management and O&M design.	✓	✓	✓	✓	
DCN O&M	DCN O&M solution	Have general knowledge of the intelligent O&M solution, typical DCN O&M, and DCN O&M automation.	✓	✓	✓	✓	
Security	Information security	Information security basics	Be familiar with defense against common cyber security threats as well as common network security devices.	✓	✓	✓	✓
		Information security management technologies	Master information security protection and trends, information security management and standards, privacy protection and related legal means, and information security assurance mechanisms and means.	✓	✓	✓	✓
	Basic cyber security	Cyber security basics	Have a general understanding of basic firewall technologies, including security policy, NAT, hot standby, user management, intrusion prevention, IPv6 security, and endpoint access security.	✓	✓	✓	✓
		Advanced firewall features	Be familiar with advanced firewall features, including high reliability, traffic management, virtual system, and intelligent uplink selection.	✓	✓	✓	✓
		Security networking planning and deployment	Have a good command of cyber security networking planning and deployment in different scenarios.	✓	✓	✓	✓
	VPN technologies	VPN basics (encryption and decryption)	Understand the principles of encryption and decryption technologies, PKI certificate system, and basic applications of VPN technologies.	✓	✓	✓	✓
		VPN applications	Be familiar with IPsec VPN technology and its applications, as well as SSL VPN technology and its applications.	✓	✓	✓	✓
	Attack and defense	VPN HA technology	Have a good command of VPN HA technology (applicable to hot standby scenarios).	✓	✓	✓	✓
		Basic threat defense	Be familiar with network attacks and defense, DDoS attacks and defense, web security protection, content security filtering, and penetration test basics.	✓	✓	✓	✓
	Cloud security	APT defense	Master APT defense, security situation awareness, and Qiankun Security Cloud.	✓	✓	✓	✓
		Cloud DCN security technologies	Have a good command of security service requirements, security deployment solutions, and security configuration cases of cloud DCNs.	✓	✓	✓	✓
		Huawei Cloud security architecture design	Master public cloud security, tenant cloud security requirements and solutions, and tenant service security design.	✓	✓	✓	✓
	Security O&M	Security management center	Be familiar with emergency response and network access control.	✓	✓	✓	✓
		Security O&M and analysis	Have a good command of security O&M operations, log management, security audit technologies, situation awareness technologies (HiSec Insight), and Huawei HiSec Solution.	✓	✓	✓	✓
		Security troubleshooting	Firewall troubleshooting, VPN troubleshooting, IPS troubleshooting, and data filtering troubleshooting	✓	✓	✓	✓
Scenario-specific security solutions	Campus network security solution	Have a good command of campus network security requirements, security design, and security service deployment.	✓	✓	✓	✓	
	DCN security solution	Have a general understanding of the architecture and security requirements of traditional DCNs. Have a good command of Huawei DCN security solutions.	✓	✓	✓	✓	
WLAN	Basic WLAN services	WLAN fundamentals	Understand the CAPWAP tunnel, key WLAN packets, and STA online process.	✓	✓	✓	✓
		WLAN networking architecture	Have a good command of the Fat AP, leader AP, WAC + Fit AP, agile distributed, Navi AC, and Mesh.	✓	✓	✓	✓
		WLAN reliability	Have a good command of VRRP HSB, dual-link HSB, dual-link cold backup, and N+1 backup.	✓	✓	✓	✓
	WLAN security	WLAN access security	Have a good command of link authentication, user access security, STA blacklist and whitelist, and security policies.	✓	✓	✓	✓
		WLAN data security	Understand the open, WEP-open, WEP-share-key, WPA/WPA2-PSK, and WPA/WPA2-802.1X authentication.	✓	✓	✓	✓
		WLAN security and defense	Be familiar with WLAN network security threats, security solution overview, and security of the WLAN management, control, and forwarding planes.	✓	✓	✓	✓
		WLAN network access control	Have a good command of 802.1X authentication, Portal authentication, MAC address authentication, and MAC address-prioritized Portal authentication.	✓	✓	✓	✓
	Advanced WLAN features	WLAN roaming	Be familiar with the WLAN roaming overview, roaming traffic forwarding process, roaming optimization technologies, and smart roaming.	✓	✓	✓	✓
		WLAN radio resource management	Have a good command of WLAN air interface performance, radio calibration, STA steering, band steering, AP-based load balancing, user CAC, WLAN anti-interference, WLAN QoS, and VIP user experience assurance.	✓	✓	✓	✓
		WLAN and IoT convergence	Understand the IoT overview, IoT development trend, IoT short-range wireless technology overview, and Huawei CloudCampus IoT Solution.	✓	✓	✓	✓
		WLAN wireless positioning	Understand wireless positioning overview, wireless positioning fundamentals, and Huawei Cloud Campus Wireless Positioning Solution.	✓	✓	✓	✓
		IPv6 WLAN construction	Have a good command of IPv6 overview, IPv6-based WLAN networking and application, IPv6-based WLAN NAC, IPv6-based WLAN network security, and WLAN IPv6 evolution.	✓	✓	✓	✓
	WLAN network planning	WLAN planning basics	Have a good command of WLAN network planning overview, WLAN coverage design, and WLAN capacity design.	✓	✓	✓	✓
		WLAN network planning tool	Understand how to use the WLAN Planner and CloudCampus APP.	✓	✓	✓	✓
		WLAN network planning process	Have a good command of the overview, process, and cases of network planning.	✓	✓	✓	✓
		WLAN network optimization	Have a good command of the overview, tools, solutions, and cases of WLAN network optimization.	✓	✓	✓	✓
	Large-scale WLAN deployment	Large-scale WLAN deployment	Have a good command of WLAN project lifecycle introduction, WLAN project deliverables, and WLAN project cases.	✓	✓	✓	✓
	WLAN O&M	Cloud management	Have a good command of iMaster NCE-Campus, cloud-based WAC management, and cloud-based AP management.	✓	✓	✓	✓
Conventional O&M		Have a good command of conventional WLAN O&M.	✓	✓	✓	✓	
Intelligent O&M		Be familiar with intelligent O&M overview, real-time experience visualization, minute-level fault demarcation, and intelligent network optimization.	✓	✓	✓	✓	
Troubleshooting		Have a good command of WLAN troubleshooting overview, reliability faults, cloud management faults, wireless bridge service faults, radio management service faults, and roaming service faults.	✓	✓	✓	✓	

Note

This Exam Outline is for general use only. It does not cover all exam details.